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only a thin layer of fibres seems to be employed in the transmission of sensitive impressions, this layer forming the surface of these columns which is in contact with the gray matter.

IV. After having ascertained that there are some nerve-fibres in the white anterior columns which are employed in the transmission of sensitive impressions, I have tried to find if these fibres are sensitive or not, that is, able to give pain as the posterior roots of nerves, or unable to give pain, as the gray matter; and have found that they seem to be totally deprived of sensibility.

III. "Summary of a paper (to be presented) on the resemblance between the effects of the section of the Sympathetic Nerve in the Neck and of a transverse section of a lateral half of the Spinal Cord." By E. BROWN-SÉQUARD, M.D. Communicated by JAMES PAGET, Esq., F.R.S. Received June 25, 1857.

I will merely indicate here the principal points of similitude between the effects of these two experiments. Some of the results here mentioned as observed after the section of the sympathetic nerve in the neck, have been discovered by Prof. Bernard; the others have been found by myself. As to the effects of the section of a lateral half of the spinal-cord, I have discovered all of them.

*Section of the cervical sympathetic nerve; its effects on the corresponding side of the face.*

1. Blood-vessels dilated (paralysed).
2. As a consequence, more blood.
3. Elevation of temperature.
4. Sensibility slightly increased.
5. Ditto lasting longer there than on the other side, when the animal is chloroformed.
6. Sensibility lasting longer there than on the other side during agony.
7. Many muscles contracted.

*Section of a lateral half of the spinal cord in the dorsal region; its effects on the posterior limb, on the corresponding side.*

1. The same effect.
2. Ditto, ditto.
3. Ditto, ditto.
4. Very much increased.
5. Lasting longer than anywhere else during chloroformization.
6. Lasting longer than anywhere else during agony.
7. A state of slight contraction in many muscles.

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| 8. Absorption more rapid.  | 8. The same effect.  |
| 9. Increase of sweat and other secretions.   | 9. Increase of sweat.  |
| 10. Reflex movements last longer there than elsewhere, after death.  | 10. The same effect.   |
| 11. After poisoning by strychnia, the first convulsions take place.  | 11. The same effect.   |
| 12. A galvanic current too weak to excite contraction elsewhere, may act there.  | 12. The same effect.   |
| 13. The motor nerves, after death, remain longer excitable there than on the other side.   | 13. The motor nerves, after death, remain <i>notably longer</i> excitable there.           |
| 14. The muscles, after death, remain longer contractile there than on the other side.  | 14. The muscles, after death, remain <i>much longer</i> contractile there.                 |
| 15. The contractility of blood-vessels is greater and lasts longer there.  | 15. The same effect.   |
| 16. The galvanic muscular current (as ascertained with the rheoscopic frog) is stronger and lasts longer there than on the other side.                                       | 16. The same effect (more marked).   |
| 17. Cadaveric rigidity appears later there than on the other side, and it lasts longer.  | 17. Cadaveric rigidity appears <i>notably later</i> there than elsewhere and lasts longer. |
| 18. It is easier to regenerate there than on the other side the vital properties of nerves and muscles by injections of red blood, a short time after they have disappeared. | 18. The same effect (more marked).   |
| 19. Putrefaction comes on later, and seems to progress more slowly there than on the other side.   | 19. The same effect (more marked).   |

All these effects, in the two cases, seem to be produced in the following manner :—There is a paralysis of the vascular nerves and therefore a paralysis of the blood-vessels ; in consequence of this paralysis, the blood arrives in larger quantity and therefore the temperature is higher ; nutrition is increased, and, in consequence, the vital properties of nerves, muscles and blood-vessels are augmented. Other causes contribute to the increase of the vital properties of nerves and muscles in the posterior limb after section of a lateral half of the spinal cord ; among them I may point out the influence of the

oxygen of the atmosphere on the spinal cord, the paralysis of the blood-vessels of this organ, and the state of rest of the muscles and motor nerves of the limb.

If we compare the side of the face where the sympathetic has not been divided, with the posterior limb on the uninjured side of the spinal cord, we find that they also have a great many points of resemblance. They both receive less blood than usual, their temperature diminishes, their nutrition is less active, and their vital properties also diminish.

IV. "Experimental Researches on the Influence of Efforts of Inspiration on the Movements of the Heart." By E. BROWN-SÉQUARD, M.D. Communicated by JAMES PAGET, Esq., F.R.S. Received June 25, 1857.

A very interesting fact, of which many circumstances have been carefully investigated by Professor Donders and Dr. S. W. Mitchell, has received a wrong explanation from those physiologists. This fact consists in a diminution of either the strength or the frequency of the beatings of the heart, when an energetic effort at breathing is made and maintained for half a minute or a little more. Professor Donders thinks that this influence of inspiration on the heart is due to a mechanical agency of the dilated lungs on this organ.

They admit that the state of the lungs has a great influence on the heart, but the principal cause of the diminution in the movements of this organ is very different from what has been supposed by Professor Donders, by Professor J. Mueller, and others. It is known that when the medulla oblongata, or the par vagum are excited (either by galvanism, as the Brothers Weber have discovered, or by other means, such as a mere compression, or a sudden wound, as I have found), the heart's beatings diminish or cease entirely. Whether this stoppage be due to the cause I have attributed it to or not, is indifferent to my present object. What is important is, that in these cases an irritation on the origin of the par vagum acts through it on the heart to diminish or to destroy its action.